

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following remarks is respectfully requested.

Claims 1-9 are active in this application, Claims 1, 5, 6, 8 and 9 having been amended by the present amendment.

In the outstanding Office Action Claims 1-9 were rejected under 35 USC §112, second paragraph, as being indefinite; Claims 1-2, 4 and 9 were rejected under 35 USC §102(e) as being anticipated by Higashikawa (6,333,138); Claims 3, 5, 6 and 8 were rejected under 35 USC §103(a) as being unpatentable over Higashikawa; and Claims 1-2 and 4-9 were rejected under 35 USC §103(a) as being unpatentable over Shimomura (JP 2001-217173).

In light of the several grounds for rejection, the pending claims have been amended to clarify the claimed invention and thereby more clearly patentably define over the cited art. To that end, the claims clarify that the subject charged-particle beam writer transfers character patterns onto a specimen by a scan-projection strategy for scanning the patterns on a mask with a charge-particle beam. Claim 1 has been further amended to clarify that the subject charged-particle beam writer includes “a data creating unit configured to create pattern data by combining first figure data and decompressed second figure data, said pattern data representing a state where a first figure defined by the first figure data and drawn by the VSB strategy and a second figure defined by the second figure data and drawn by the scan-projection strategy are arranged on the specimen . . .”

The change in terminology from “mask-scan strategy” to --scan-projection strategy-- reflects terminology used in the original specification, e.g., page 7, line 15. These terms represent the same meaning, but the former terminology appears to be preferred in treatises. Nevertheless, in view of the use of the latter terminology in the specification, the claims have

been amended accordingly. Further, the amendments to Claim 1 find support at page 3, lines 3-14 and page 23, lines 12-23 of the specification. No new matter has been added.

The amended claims are believed to be patentably distinguishing because in Applicants' view the outstanding Official Action mistakes the multiple image formation technique shown in Higashikawa for the scan-projection strategy or VSB strategy of the claimed invention. Instead, Higashikawa relates to multiple drawing using a variable shaped electron beam or a non-variable shaped electron beam, and more specifically to an improved method for overlapping fields. In contrast, Claim 1 defines a charged-particle beam writer using VSB strategy and mask-scan strategy in combination, and more particularly to a technology for correcting the proximity effect.

The technology shown in Higashikawa improves the pattern connection accuracy in a field boundary by performing overlapping drawing, and further improves the connection accuracy of drawing patterns by gradually changing the dose of beam in the overlapping portions of the drawing patterns.

The proximity effect-correction technology described in Jap.J.Appl.Phys 30(1991)2965 is an improved technology for correcting the proximity effect by using an ordinary variable-shaped beam.

The technology disclosed by Shimomura is intended to improve the connection accuracy of CP (charged particle) patterns when the patterns are drawn using scan-projection strategy. The connection accuracy is improved by multiple drawing. In contrast, the present invention draws a very large CP pattern by using VSB strategy and scan projection strategy in combination, and the drawn CP pattern is so large that it cannot be recognized as one figure in terms of the proximity effect correction. Applicants' invention provides a technology for accurately and efficiently correcting the proximity effect. Applicants respectively submit that none of the references of record disclose or obviate this technology.

As stated in Claim 1, the present invention decompresses scan transfer pattern data and combines the decompressed data with the drawing pattern data of VSB, thereby generating drawing pattern data to be drawn. Based on this drawing pattern data, the present invention calculates a dose of beam which is effective in correcting the proximity effect. This feature of the present invention is not disclosed in any of the references cited by the Examiner, including Higashikawa and Shimomura. Reconsideration of the rejection of Claims 1-8 is therefore respectfully requested.

Claim 9 is similar to Claim 1 insofar as Claim 9 recites a charged-particle beam writer which transfers character patterns onto a specimen by a scan-projection strategy for scanning the patterns on a mask with a charge-particle beam. According to Claim 9, the charged-particle beam writer includes “a data creating unit configured to create pattern data representing a state where the character patterns are arranged on the specimen; a computing unit configured to calculate, on the basis of the pattern data, the amount of correction for correcting the drawing dimensions of the character patterns on the specimen; and a control unit configured to control the dose of beam at each position on the specimen on the basis of the calculated amount of correction.” It is respectfully submitted that the prior art fails to disclose or obviate such subject matter, and reconsideration of the rejection of Claim 9 is also respectfully requested.

Accordingly, in view of the present amendment and in light of the above discussion,

Application No. 10/665,285  
Reply to Office Action of December 20, 2004

the outstanding grounds for rejection are believed to have been overcome and an early and favorable indication to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



---

Eckhard H. Kuesters  
Attorney of Record  
Registration No. 28,870

Customer Number

22850

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 06/04)

I:\ATTY\EHK\AMEND-RESPONSES\0039\24S\243057US-AF.DOC